NAME: DATE:

p1020: graded take-home open-note practice exam (version 210)

Question 1

Let f represent a function. If $f[7] = 5$, then there exists a knowable solution to the equation below.

$$y = 9 \cdot \left(f\left[\frac{x - 10}{4} \right] - 2 \right)$$

Find the solution.

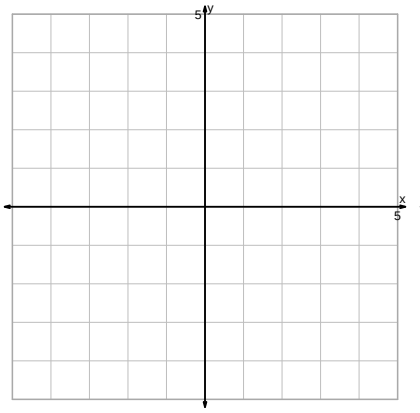
$x =$

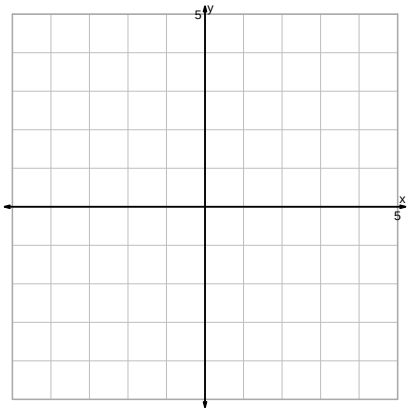
$y =$

Question 2

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

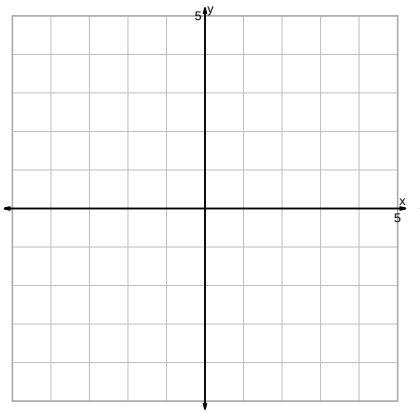
$y = \sqrt[3]{2x}$

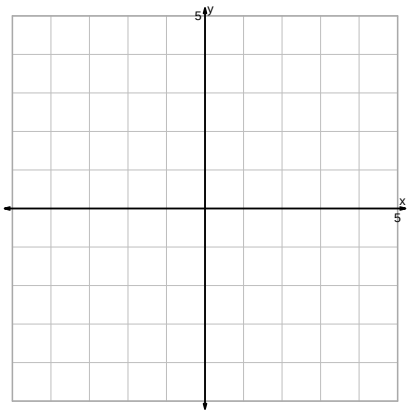




$y = \sqrt[3]{x - 2}$

$y = x^3 - 2$

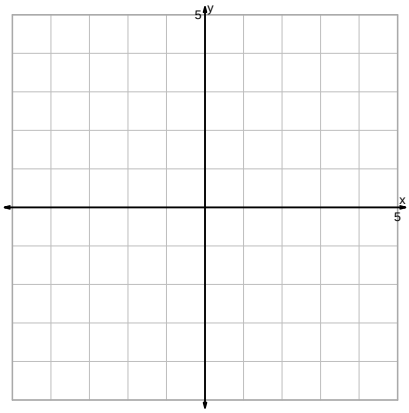


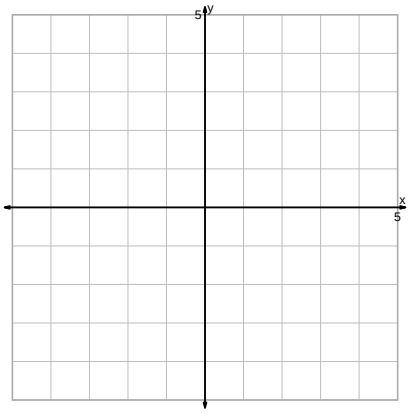


$y = \dfrac{\log_2(x)}{2}$

Question 2 continued...

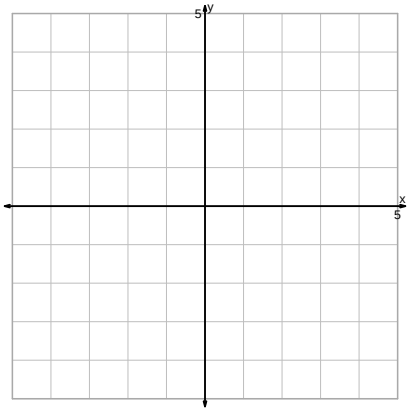
$y = \left(\frac{x}{2}\right)^2$

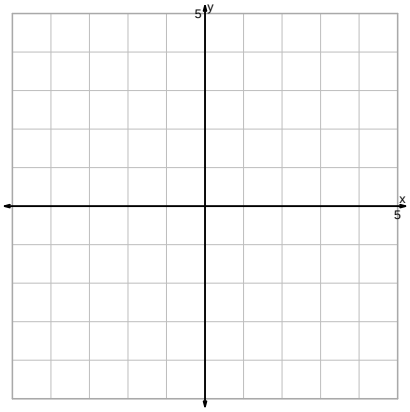




$y = x^3 + 2$

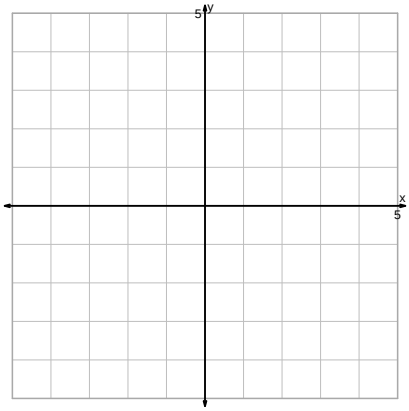
$y = 2^{x+2}$

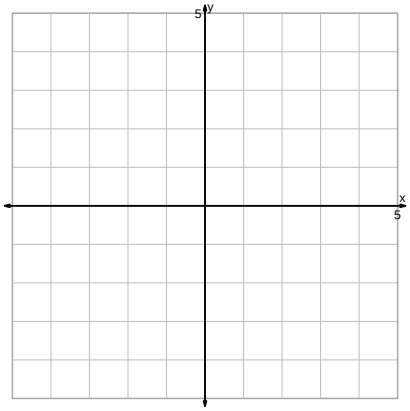




$y = -\sqrt{x}$

$y = \log_2(-x)$

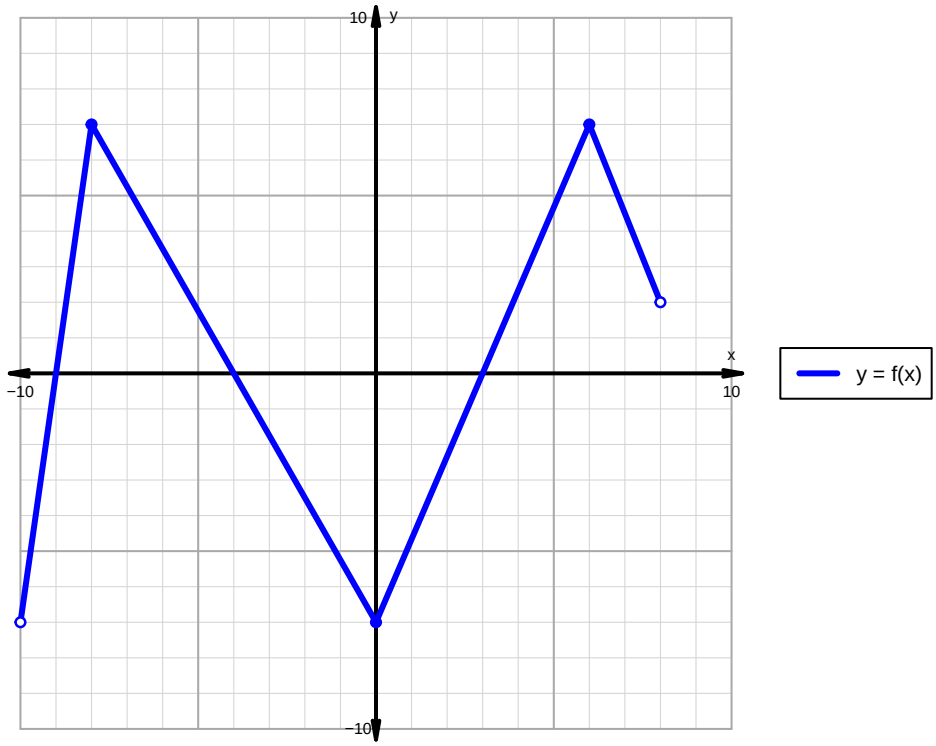




$y = 2 \cdot \sqrt{x}$

Question 3

A function is graphed below.



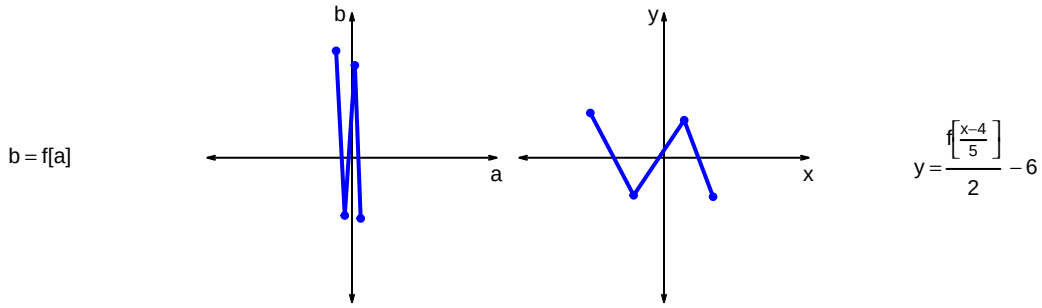
Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4

Let f represent a function. The curves $b = f[a]$ and $y = \frac{f\left[\frac{x-4}{5}\right]}{2} - 6$ are represented below in a table and on graphs.

a	b	x	y
-11	74	-51	31
-5	-40	-21	-26
2	64	14	26
6	-42	34	-27



a. Write formulas for calculating x from a and calculating y from b. (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = \frac{f\left[\frac{x-4}{5}\right]}{2} - 6$?

Question 5

A parent square-root function is transformed in the following ways:

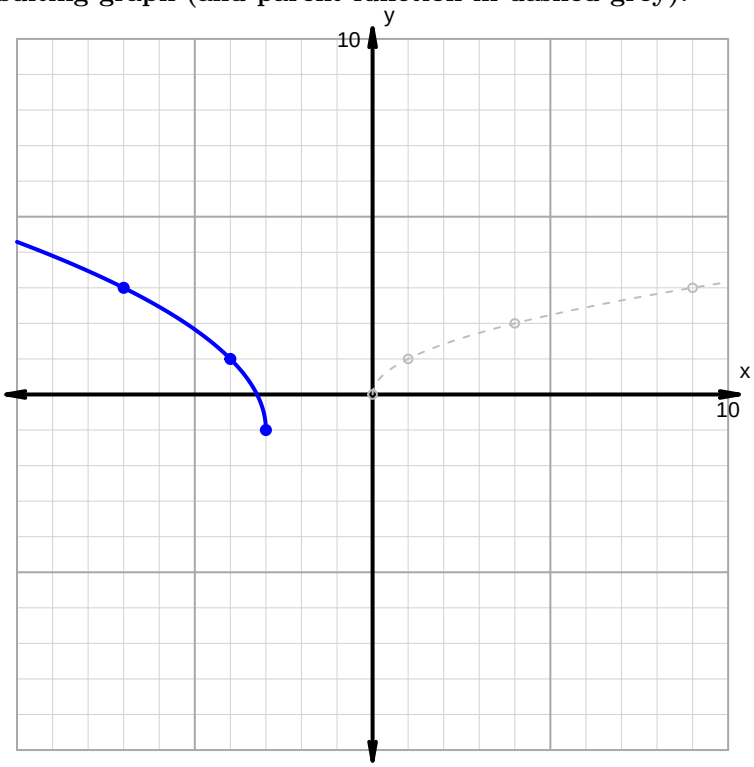
Horizontal transformations

1. Horizontal reflection over y axis.
2. Translate left by distance 3.

Vertical transformations

1. Vertical stretch by factor 2.
2. Translate down by distance 1.

Resulting graph (and parent function in dashed grey):

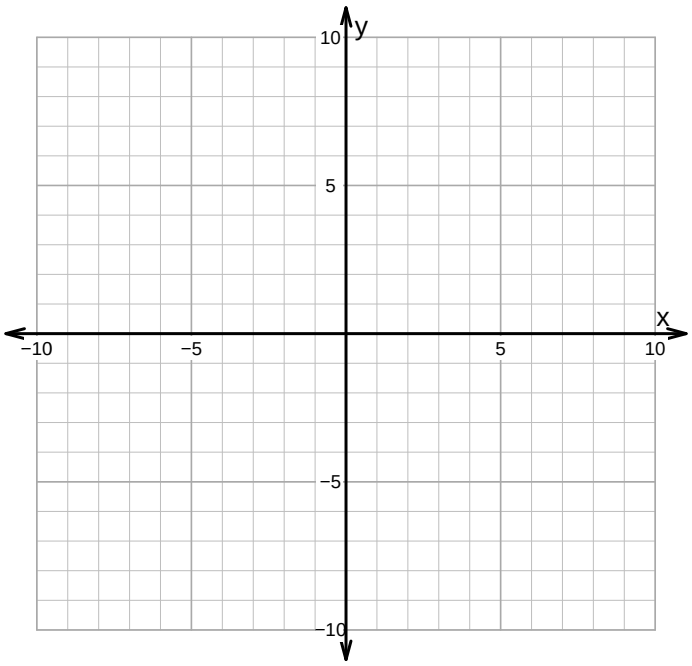


- What is the equation for the curve shown above?

Question 6

Make an accurate graph, and describe locations of features.

$$y \;=\; -3 \cdot |x - 1| + 3$$



Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	